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REPORT NO. [redacted]

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COUNTRY Czechoslovakia

DATE DISTR. 27 Nov. 1953

SUBJECT Heating by Alternating Current of High-Power Vacuum Tubes with Directly Heated Cathodes

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THIS IS UNEVALUATED INFORMATION

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1. Until 1951 only direct current supplied by dynamo was used in Czechoslovakia for heating high-power vacuum tubes with directly heated cathodes. I heard in the Tesla-Vrsovice plant in 1951 that the Tesla-Hloubetin plant applied alternating current from transformers to heat vacuum tubes with directly heated cathodes for new broadcast transmitters which were then under construction in the Tesla-Hloubetin plant. The reason the Tesla plant replaced direct current heating by alternating current heating was that the dynamos were too expensive and the delivery terms were very long.

2. A new testing station for vacuum tubes has been under construction in the Tesla-Vrsovice plant since the second half of 1951. I believe that this testing station may be 80% finished as of autumn 1953. Some dynamos were needed for the testing station. However the planning officials failed to include dynamos in the 1951 plan for equipment needed and it would therefore be a long time before the dynamos needed were produced. It was decided to use alternating current from transformers instead of direct current from dynamos. The first tests took place in the plant at the end of 1952. A transformer was designed with a movable core which acted as a voltage control. By gradually removing the core from the transformer body, the voltage in the secondary winding, which was near zero at the start of the operation, increased to the voltage needed. The core was operated by an electric motor. I believe that this method applied by the Tesla-Vrsovice plant was similar to the method used by the Tesla-Hloubetin plant for the same purpose in the construction of broadcast

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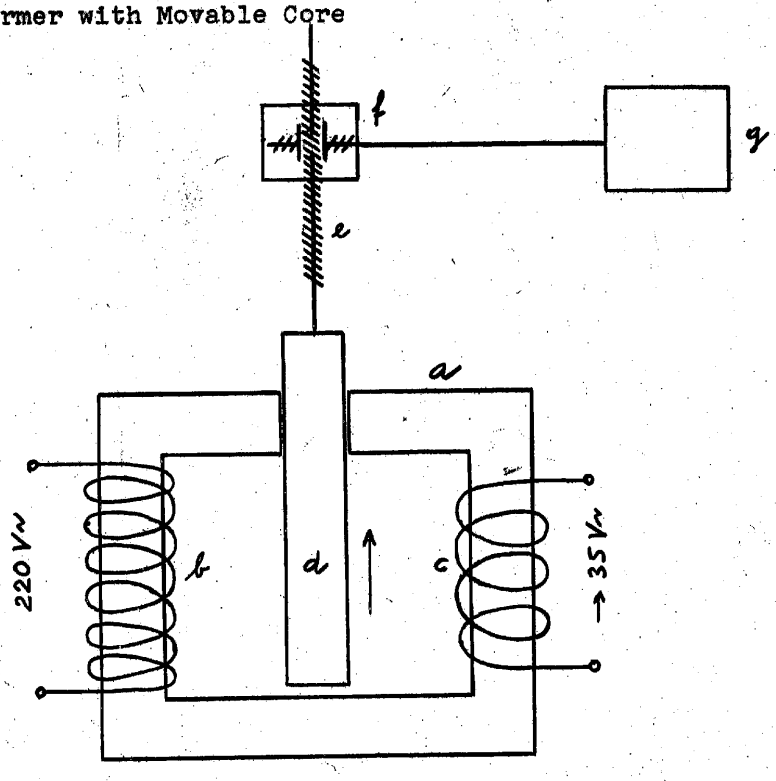
transmitters. It was planned to set up about five transformers of this type in the testing station connected with the Tesla-Vrsovice plant. I do not know how the bad effect which the electronic tube filament heated by alternating current had on the functioning of the tube was eliminated, as this was a problem in transmitter production and was therefore handled exclusively by the Tesla-Hloubetin plant, but I know that the Tesla-Hloubetin plant developed a method for this purpose which proved satisfactory.

/Sketch of Transformer with Movable Core/

Sketch of Transformer with Movable Core



LEGEND

a. Transformer

b. Primary winding

c. Secondary winding

d. Core

e. Shaft

f. Worm gear

g. Motor